Temporary Migration and STD/HIV Risk Sexual Behavior: A Population-Based Analysis of Gender Differences in China

Xiushi Yang and Valerian Derlega
Old Dominion University

Guomei Xia
Shanghai Academy of Social Sciences

Correspondence: Xiushi Yang, Department of Sociology and Criminal Justice, Old Dominion University, Norfolk, VA 23529, USA; tel.: (757) 683-3809; fax: (757) 683-5634; e-mail: xyang@odu.edu

* Funding for the research was provided through National Institutes of Health/National Institute on Drug Abuse Grant 1R01DA13145.

ABSTRACT

Introduction

Amid the miracles of economic growth, since the early 1980s, China has witnessed epidemic growth in STDs and widespread commercial sex (van den Hoek *et al*. 2001; Parish *et al*. 2003; Pan *et al*. 2004). The growth of commercial sex in China and the increasing unprotected casual sex among its 1.3 billion population have and will likely continue to fuel the epidemic growth of STDs unless effective measures are taken to reduce STD risk sexual behaviors. In 2004 (?) alone, … cases of STDs were officially reported nationwide with the actual number perhaps many times larger (?). If left unchecked, the continuing spread of STDs, including HIV, will create a serious public health challenge and threatening national security, social stability, and economic development (China MOH and UNAIDS 2003). While causes of commercial sex and the spread of STDs are likely to be complex and multifaceted, increasing temporary migration has been portrayed by the media and implicated in the literature as one of the main catalysts.

The growth of temporary migrant population in China since the early 1980s has been truly phenomenal. Although varied by sources, the total number of temporary migrants was estimated to have grown from 11 million in 1982 to 79 million in 2000 (Liang and Ma 2004). Among the tidal waves of rural-urban labor migrants are hundreds of thousands of young women from poor rural villages (Roberts 2002; Fan 2003; Gaetano and Jacka 2004). Living and working away from home and/or regular sexual partners, the uprooting and on the move of so many migrant men and women in their primary, sexually active ages, have undoubtedly created conditions that are conducive to sexual promiscuity and commercial sex. In fact, residential immobility was considered the most important factor that explains the absence of commercial sex in pre-reform China (Troyer, Clark and Rojek 1989).

However, while the link between migration, commercial or casual sex, and HIV/STDs has been well documented, little research has addressed the question of whether men and women may experience differently in behavior change and STD/HIV risk as a result of migration. Is there any interaction between migration and gender in post-migration changes in sexual behavior? Are men or women more vulnerable to changes in sexual behavior after migration? Are there any significant differences in gender-specific

correlates of STD/HIV risk sexual behavior? Answers to these questions have important public health implications, as women in China are almost as active as men in migration (Fan 2000, 2004; Yang 2000; Liang and Chen 2004; Liang and Ma 2004) and their share in reported STDs has been rising in recent years (). Similarly, women in China, as elsewhere (UNAIDS 2004), have become the fastest growing population newly infected with HIV (China MOH and UNAIDS 2003).

This paper tries to answer these questions through a population-based analysis of gender differences in (1) migration and risk sexual behavior linkages and (2) factors influencing STD/HIV risk sexual behavior. We argue that given the gender inequality in education and occupational training, migrant women will experience greater difficulties in competing for mainstream employment in the city. Economic hardship may force migrant women to exchange sex for money or to enter into sexual relationship in hope of securing economic and emotional support. Economic hardship and dependence on partner may in turn leave many migrant women with little control in their sexual encounters; gendered moral and social values can further subject migrant women to a subordinate position in sexual relationships. Consequently, compared to migrant men, migrant women may be socioeconomically more marginalized and behaviorally more vulnerable to STD/HIV risk commercial and casual sex. The analysis will help to shed light on the interplay between migration and gender in affecting STD/HIV risk sexual behavior and also provide important empirical data for the design of gender-specific STD/HIV prevention intervention programs.

Migration and Sexual Behavior Change

A number of studies in China (Anderson *et al*. 2003; Li *et al*. 2004; Smith and Yang 2005; Yang forthcoming) and elsewhere (Brockerhoff and Biddlecom 1999; Skeldon 2000; UNAIDS 2001; Wolffers *et al*. 2002; Lansky *et al*. 2000) have highlighted the vulnerability of migrants to STD/HIV risk sexual behaviors. On the one hand, the usual separation from spouse or regular sexual partner disrupts migrants' regular sexual relationships and thereby become "an unremitting source of anxiety" for migrants (Jochelson, Mothibeli, and Leger, 1991:163). This will particularly be the case for temporary migrants who, given the transient nature of temporary migration, are most likely to experience frequent separation

from the family. Such separation from family is presumably conducive to casual sex and/or dependence on alcohol as a way to escape loneliness, bury anxieties, and release sexual frustration (Brockerhoff and Biddlecom 1999; Caldwell, Anarfi, and Caldwell 1997; Jochelson, Mothibeli, and Leger 1991). Being away from home also means a breakaway from family supervision, which can lead to venture into commercial sex.

On the other hand, temporary migrants' post-migration social and economic milieus are believed to be conducive to risky sexual behavior among migrants (Yang forthcoming). Although not all are alike, many temporary migrants are socially, culturally, and residentially isolated from the "mainstream" society in the place where they live and work. Most are concentrated in the margins of the urban economy, engaged in dirty, dangerous, and dead-end jobs, shunned by urban natives (Knight, Song, and Jia, 1999; Roberts, 1997; Solinger, 1999; Wang, Zuo, and Ruan, 2002), and live with fellow villagers at the place of work or concentrate in migrant communities, often characterized by overcrowding, social disintegration, and lack of social and health services (Ma and Xiang, 1998; Zhang, 2001). Migrants' social interaction in the city does not go beyond that with fellow villagers or migrants. As a result, many rural-urban temporary migrants in China experience little social or cultural assimilation in cities, feel helpless, insecure, discontented, and resentful, and are prone to risky sexual behavior (Anderson *et al*. 2003).

Further, the process of temporary migration is believed to weaken social and normative control over individual behavior by detaching migrants from the family and home communities (Yang forthcoming). Such detachment results from the physical separation of temporary migrants' working and living place (the place of destination) from their family and home community in the place of rural origin. It creates some sort of social control vacuum whereby migrants feel less constrained by social norms and values since families and friends back home are unlikely to find out what they do while away from home (Maticha-Tyndale *et al*. 1997; Yang 2000).

While migrants' behavior away from home could be subject to social control in the city, two factors make social control less effective for temporary migrants. First, as pointed out earlier, temporary migrants tend to concentrate residentially in the fringe areas of the city, where law enforcement is lax and

social integration is poor. Such a living environment is not only conducive to deviant behaviors, but also where socially proscribed and HIV risk behaviors, such as commercial sex and drugs, are more acceptable or tolerated. The transient nature of temporary migrants' residence may further exacerbate the problem because it becomes difficult for law enforcement and other authorities to monitor their behaviors. Second, post-migration social and economic marginalization may render migrants indifferent to social sanctions in cities because the very marginal status makes them feel nothing to lose if their behaviors are detected.

Thus, while the process of temporary migration detaches migrants from families and home communities in places of rural origin, it fails to attach them to mainstream societies in places of urban destination. The power of sanction embedded in social control over individual behavior may be lost in the process. The more anonymous life in a city, the transient nature of migrant life, and the easier access to commercial sex together help temporary migrants to break away from social norms of morality and sexual fidelity and encourage them to seek casual sex.

Gender and STD/HIV Risk Sexual Behavior

In 2002, global statistics indicated for the first time that an equal number of women as men were newly infected with HIV. Women are now the fastest growing population newly infected with the AIDS virus (Mize *et al*. 2002; UNAIDS 2004). Ironically, women on average were found to be sexually less risky than men (Juran 1995). Further, there is evidence that women are usually more willing to take protective measures and also care more about safety in sexual relationships than men (Jadack *et al*. 1995). Yet many women fail to actually practice safe sex and put themselves at the risk of HIV and other STDs. This suggests that (1) women's increased HIV risk may result from more than their own risk behaviors (Montgomery *et al*. 2002) and (2) women's STD/HIV risk sexual behavior may result from factors beyond their control and cognition. HIV research among women needs to pay close attention to issues of gender and gender-specific correlates of risky sexual behavior.

Indeed, gender-related unequal power relationships and cultural norms about gender and sexuality are increasingly recognized as important determinants of risky sexual behavior among women (Raffaelli and Pranke 1995; Browning *et al*. 1999; Tang, Wong, and Lee 2001). According to the theory of gender

and power (Connell 1987; Wingood and DiClemente 2002), women's heightened vulnerability to STDs, including HIV, is a function of gendered relationships between men and women that are rooted in the sexual divisions of labor and power and the gendered structure of social norms. The sexual division of labor limits women's equal access to the paid labor market and creates economic inequalities between men and women. This reinforces women's economic dependence on men and increases women's economic vulnerability to HIV/STD risk sexual behavior. The sexual division of power leads to unequal power between men and women that results in men's control in relationships and renders women vulnerable to sexual or physical abuse. This limits women's ability to make decisions on sexual matters and increases their physical vulnerability to risky sexual behavior. The gendered structure of social norms generates gender-specific norms that restrict women's sexual expressions and submit women to men in sexual relationships. This discourages open discussion within relationships and limits women's access to information, thereby increasing women's social vulnerability to risky sexual behavior.

Together, economic inequalities, unequal power, and gender-specific cultural norms exert critical influences over women's sexual behavior and render formidable barriers to women in exercising personal control in sexual and social relationships (Amaro and Raj 2000). Research among Chinese women (Tang, Wong, and Lee 2001) suggests that the Confucian concept of model womanhood, which commands the submission of women to men, can significantly constrain women's ability to insist on condom use. In general, non-condom use among Chinese women is related to lack of information, embarrassment in talking about condoms, and fear of being perceived as sexually available as a result of conservative Confucian concepts about women and sexuality. Studies of women working in China's flourishing entertainment industry (Liao, Schensul, and Wolffers 2003; Xia and Yang 2005), who are mainly temporary migrants from poor rural villages, have underscored the importance of economic survival and cultural norms in understanding unprotected commercial sex.

Given the increased vulnerability to STD/HIV risk sexual behavior among temporary migrants and women, is there any interaction between migration and gender that potentially renders migrant women particularly vulnerable? Despite the important policy implications of the question, research on

STD/HIV risk sexual behavior in China has rarely addressed the issue of migration-gender interaction and gender-specific correlates of risky sexual behavior. The lack of attention to the interplay between migration, gender, and HIV/STD risk sexual behavior is particularly striking as women are as actively as men participating in rural-urban labor migration and as labor migration in China is increasingly recognized as a gendered process (). We argue that migrant women in China are subject to the double jeopardy of migration and gender; they are particularly vulnerable to risky sexual behavior. Consequently, migrant women may be at high risk of acquiring STDs/HIV while in cities and become an important bridge population in the spread of the diseases as infected women return to rural villages (many of them do after a few years of working in the city) and unknowingly pass STDs/HIV to their marriage or sexual partner (Lau and Thomas 2001; Hirsch *et al*. 2002; Anderson *et al*. 2003; Lurie *et al*. 2003).

Data and Methods

Data used in the analysis are from a large population-based survey conducted in 2003, covering an entire province in southwestern China. Sample selection followed a three-stage sampling procedure. First, tabulations of known HIV/AIDS cases, drug users, and migrants by counties were prepared with data from the provincial public health and public security agencies and the 1995 mini-census. These tabulations were used to rank all counties, and from the ranked list of counties, eight were selected, giving priority to counties with higher concentration of HIV, drug use, and migrant population and considering geographic coverage of the province. Second, all rural townships and urban neighborhoods in the selected eight counties were ranked by county according to estimates of HIV cases, drug users, and temporary migrants, based on existing data from the same government agencies and the 1995 mini-census. From the ranked list in each county, five townships and neighborhoods were selected. Again, the selection was not random but giving priority to places with a combination of high prevalence of HIV, drug users, and temporary migrants and considering geographic coverage of the county. This resulted in a total of 40 townships and neighborhoods as the primary sampling units (PSUs).

Finally, in each PSU, all individuals 18 to 55 years of age were ordered in sequence in one of four categories: HIV positive, drug users, temporary migrants, and non-migrants. Information used to assign

individuals to a category was based on household registration rosters (non migrants) and confidential registrations of migrants, drug users, and HIV/AIDS. They were crosschecked for multiple listings. If an individual appeared on more than one category, the individual was reassigned to only one category according to the following priority order: HIV, drug user, migrant, and non-migrant. For example, a migrant who was also a drug user and HIV positive, that individual was retained in the list of HIV positive persons and removed from the lists of migrants and drug users. Therefore, all individuals would appear in one and only one of the four lists, which were mutually exclusive.

In selecting individuals, disproportionate probability sampling (Bilsborrow *et al*. 1997) was used to make sure that the resulting sample would contain sufficient numbers of rare populations, e.g., HIV positive and drug users, but not overwhelmed by non-migrants. A target random sample of about 150 individuals from each PSU was planned and distributed as follows: 20 HIV positive, 30 drug users, 40 temporary migrants, and 60 non-migrants. In each category, sample selection started with randomly picking a person from the list and continued selecting at fixed intervals determined by the ratio between the total on the list and the target number for the category. If a list contains fewer than the target number, everyone on the list was selected. Because not every PSU had the target number of subjects in all categories, the actual sample size in a category varied across PSUs.

During the fieldwork, interviewers visited the sampled individuals, explained to them the purpose of the study, their right to refuse, and compensation for their time, and invited them to participate. If the respondent was absent, a second visit was scheduled. If a respondent could not be reached the second time or refused to participate, a replacement was selected randomly from the original sampling list containing the absent or refused respondent unless there was no one left on the list. In total, 5,499 individuals, including 117 from the pilot testing town, were successfully recruited, who consented to participate and completed a face-to-face interview, which took place in private at respondents' home or if they preferred a place away from home. All interviews were conducted in Mandarin or the respondent's dialect if the respondent could not communicate in or understand Mandarin.

Version 9 of the STATA software is used to conduct statistical analyses, which are divided into two parts. The first part of the analysis focuses on bivariate comparisons between temporary migrants and non-migrants by gender. Pearson's Chi-squared tests of difference in proportions, which are further corrected for survey design and converted into *F* statistics in STATA's "svy" cross-tabulation analysis, are used to test if migrants differ from non-migrants in prevalence of eight STD/HIV related risk behaviors and if migrant and non-migrant differentials vary by gender. Temporary migrants are defined as respondents who were working and living in the place of interview at the time of survey but without the official local household registration (or *hukou*). The eight outcome measures of risk behavior are all defined as dichotomous variables, indicating whether the respondent had casual sex, unprotected casual sex, commercial sex, more than one casual partner, more than one casual sexual act, any episode of drinking while having sex, any episode of taking drugs while having sex, and known IDU sexual partner in the 30 days prior to the survey.

In the second part of the analysis, the eight dichotomous STD/HIV risk behavior outcome variables were first combined to form a composite risky sexual behavior index, which may be a more accurate measure of STD/HIV risk than any single dichotomous measure (c.f., Williams et al. 2001). The higher the index, the STD/HIV riskier the respondent was in terms of sexual behavior. Cronbach's alpha for the composite index with the survey data was 0.80, indicating high internal reliability of the index. Multiple linear regression is then used to regress the composite risky sexual behavior index on migrant status and gender to examine the impact of temporary migration and gender on risky sexual behavior while controlling for differences in individual characteristics. Specifically, age, educational attainment, marital status, urban residence, social influence of family and peers, and measures of economic marginalization, social isolation, and lax social control, which are believed to also influence sexual behavior, will be controlled in the multiple regression analysis. Age, educational attainment, marital status, and urban residence are self-explanatory. Further explanation of other control variables follows.

The economic marginalization index measures respondents' relative socioeconomic status. It was constructed by first dichotomizing answers (1 vs. 0) to questions on employment (unemployed vs.

employed), industry (agriculture, construction, and personal services vs. others), ownership of company (self/small privately owned vs. state/collective owned), occupation (menial jobs, including farmers and personal service workers, vs. more prestigious ones), income (annual income below 600 yuan vs. 600 yuan or higher), perceived income level and working conditions (below average vs. average or better), and eight employment-related benefits (not having vs. having pension, health insurance, social security, unemployment benefit, paid holidays, paid sick leave, housing allowances, and on-job training). These 15 dichotomous answers were then summed to form the economic marginalization index. The higher the score, the more economically marginalized the respondent. Cronbach's alpha for the summative composite index with the data was 0.86, indicating high reliability.

Social isolation was measured by a modified version of the UCLA Loneliness Scale (Russell and Cutrona, 1988) and the Center for Epidemiologic Studies Depression Scale (Radloff, 1977). For the former, respondents reported on a four-point scale how lonely they felt on each of 20 statements, while the latter was based on ratings of 20 statements on a four-point scale on the frequency of depressive symptoms experienced in the week prior to the interview. Answers to the 20 statements of the two scales were summed to form a "loneliness" and a "depression" scale, respectively. The higher the scales, the more lonely or depressed the respondent felt. Cronbach's alphas for the two scales were 0.80 and 0.84, both indicating high internal reliability.

Lax social control was measured by a modified version of the Attitudes toward Authority Scale (Emler, 1999). Study respondents reported yes or no on their personal experience with respect to nine events indicating disrespect for laws or use of "deviant" ways to achieve personal ends. Answers were then summed to create a social control scale. The higher the scale, the more likely the respondent had behaved in disrespect for laws or deviant ways (lax social control). Cronbach's alpha for the scale is 0.71, indicating good reliability.

Social influences of family and peers on sexual behavior were measured by respondents' self-reports of having family members or peers with risky sexual behaviors. Respondents reported separately on whether they knew if parents, siblings, relatives, and friends had multiple sexual partners, homosexual

behavior, and exchanged sex for money or drugs. The 12 member-behavior pair wise answers were then summed to form a "sexual behavior influence" index (Cronbach's alpha=0.51).

Results

. . . . . .

Table 2. Risky Sexual Behaviors 30 Days Prior to Interview among Sexually Active Individuals 18 to 55 Years of Age, by Gender and Migrant Status

Risky sexual behaviors	Temporary migrants (n)	Non migrants (n)	Total sample (n)
Females:			
Had casual sex	31.3 (537)**	2.1 (1,143)	4.5 (1,680)
Had unprotected casual sex	5.5 (537)**	1.1 (1,143)	1.5 (1,680)
Involved in commercial sex	24.4 (547)**	0.3 (1,174)	2.3 (1,721)
Had more than one casual partner	20.8 (556)**	0.3 (1,189)	2.0 (1,745)
Had more than one casual sexual act	19.6 (556)**	1.9 (1,189)	3.4 (1,745)
Drinking while having sex	13.3 (556)**	2.4 (1,189)	3.3 (1,745)
Taking drugs while having sex	0.2 (556)	0.1 (1,189)	0.1 (1,745)
Had known IDU sexual partner	3.1 (556)**	0.1 (1,189)	0.4 (1,745)
Males:			
Had casual sex	5.8 (722)	5.1 (2,164)	5.2 (2,886)
Had unprotected casual sex	2.8 (722)	3.4 (2,164)	3.3 (2,886)
Involved in commercial sex	5.2 (730)	3.3 (2,188)	3.5 (2,918)
Had more than one casual partner	1.4 (747)	1.1 (2,229)	1.1 (2,976)
Had more than one casual sexual act	3.0 (747)	4.2 (2,229)	4.1 (2,976)
Drinking while having sex	15.0 (747)	14.5 (2,229)	14.6 (2,976)
Taking drugs while having sex	0.2 (747)	0.3 (2,229)	0.3 (2,976)
Had known IDU sexual partner	0.3 (747)	0.4 (2,229)	0.4 (2,976)

Note: Statistical significance tests are based on comparison between temporary migrants and non-migrants. The numbers in parentheses are unweighted sample sizes.

** $p < 0.01$.

Table 3. Regression Analysis by Gender of Risky Sexual Behaviors in the 30 Days Prior to the Interview among Sexually Active Individuals 18 to 55 Years of Age

Explanatory Variables	Males	Females	Total Sample
Migrant Status:			
Temporary migrant	-0.0426	0.6526**	0.7688**
Individual Characteristics:			
Age	0.0009	-0.0029**	-0.0016
Education	-0.0145	-0.0051	-0.0077
Married	-0.1534	-0.6130**	-0.3203**
Male	/	/	0.1773**
Post-migration Characteristics:			
Economic marginalization index	0.0021	0.0013	0.0023
Depression scale	0.0142	0.0090**	0.0118**
Loneliness scale	-0.0002	0.0006	0.0004
Normlessness scale	0.1321**	0.1997**	0.1416**
Social Influences			
Sexual influence index	0.1329*	0.1293*	0.1369**
Urban residence	0.0962	0.0424	0.0722
Interactions:			
Male by migrant	/	/	-0.8253**
Unweighted Sample Size	2,957	1,730	4,687
Model R^2	0.3147**	0.0791**	0.1762**

Notes